

## 1.0 INTRODUCTION

Under the Atomic Energy Act of 1954, as amended, the U.S. Department of Energy (DOE) is obligated "to regulate its own activities so as to provide radiation protection for both workers and the public." Presidential Executive Order 12088, "Federal Compliance with Pollution Control Standards," further requires the heads of executive agencies to ensure that all Federal facilities and activities comply with applicable pollution control standards and to take all actions necessary for the prevention, control, and abatement of environmental pollution.

It is the policy of DOE to conduct effluent monitoring and environmental surveillance programs that are adequate to determine whether the public and the environment are adequately protected during DOE operations and whether operations are in compliance with DOE and other applicable Federal, State, and local radiation standards and requirements. It is also DOE policy that Departmental monitoring and surveillance programs be capable of detecting and quantifying unplanned releases and meet high standards of quality and credibility. It is DOE's objective that all DOE operations properly and accurately measure radionuclides in their effluents and in ambient environmental media.

This regulatory guide describes the elements of an acceptable effluent monitoring and environmental surveillance program for DOE sites involving radioactive materials. These elements are applicable to all DOE and contractor activities for which the DOE exercises environmental, safety, and health responsibilities, and are intended to be applicable over the broad range of DOE facilities and sites. In situations where the high-priority elements may not provide sufficient coverage of a specific monitoring or surveillance topic, the document provides additional guidance. The high-priority elements are written as procedures and activities that "should" be performed, and the guidance is written as procedures and activities that "should" be performed. The regulatory guide both incorporates and expands on requirements embodied in DOE 5400.5 and DOE 5400.1.

### 1.1 PURPOSE AND SCOPE

The primary purpose of the regulatory guide is to specify the necessary elements for effluent monitoring and environmental surveillance of radioactive materials at DOE sites to comply with both applicable Federal regulations and DOE policy. The high-priority radiological effluent monitoring and environmental surveillance program elements contained in this document are given in the form of generic performance criteria - that is, the numeric limits and actions required for maintaining and operating an adequate radiation protection program for the public and the environment. In addition to the high-priority elements, this document also contains guidance to help define how the performance criteria can be met. The guide includes specific actions, equipment selections, and operational methods that would be expected to meet the performance requirements.

For new facilities and/or new effluent monitoring and environmental surveillance systems, the guidance, as defined by the "should" statements, should be considered high-priority elements and be adopted to the extent applicable. The adoption of the guidance for new facilities and/or systems is a necessary step in fulfilling the commitment that environmental obligations be carried out consistently across all operations and among all field organizations and programs.

The regulatory guide addresses the effluent monitoring and environmental surveillance practices associated with normal operations at a DOE facility. These practices may not be adequate for quantitative assessment of releases or environmental impacts associated with more serious unusual occurrences and emergency situations; these more serious situations may require a significantly different program. Precautions in this regard have been incorporated into the document as appropriate. All facilities are expected, in accordance with applicable DOE orders, to take appropriate actions to ensure a capability to detect and quantify releases of radioactive material during unusual occurrences and emergency situations.

#### 1.1.1 Environmental Monitoring

As required in the Environmental Monitoring Requirements section of DOE 5400.1, all DOE sites *should*\* develop and maintain documentation concerning their environmental protection programs in the form of environmental monitoring plans. These required plans *should*\* clearly describe how the minimum requirements defined in this document are to be met and how compliance will be ensured. In meeting the minimum requirements, each site *should*\* also consider the guidance provided in this document as "should" statements and document the specific procedural criteria that are adopted.

The responsibility for ensuring development, documentation, and implementation of the site-specific effluent measurement and environmental surveillance programs for each DOE site remains with the individual field office responsible for the facility. Copies of each site-specific environmental protection program plan that has been approved by the Program Office *should* be submitted to EH for information purposes.

#### 1.2 MANUAL ORGANIZATION AND TERMINOLOGY

This regulatory guide is organized by sections as follows:

- 1) Introduction
- 2) Liquid Effluent Monitoring
- 3) Airborne Effluent Monitoring
- 4) Meteorological Monitoring
- 5) Environmental Surveillance

- 6) Laboratory Procedures
- 7) Data Analysis and Statistical Treatment
- 8) Dose Calculations
- 9) Records and Reports
- 10) Quality Assurance
- 11) References

The user of this regulatory guide is assumed to have a working knowledge of DOE standards and requirements and of basic radiation protection concepts and terminology. Special terms are defined in Appendix A.